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AUTHOR Martin, Timothy L.
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ABSTRACT

In the years since the Williamsport Area Community College's Graphic Arts Program was last revised, the graphic arts industry has been changed by an influx of new technologies. The graphic arts program and curriculum was revised to provide graduates with skills required by the industry. The objectives of this revision were to (1) identify competencies needed by the graphic arts industries for knowledge and skills required for entry-level positions; (2) write competency-based instructional objectives; (3) develop strategies for delivering competency-based instruction; (4) develop faculty familiarity with technologies and skills in using them; and (5) develop course materials. Develop a Curriculum (DACUM) workshops were conducted to determine competencies needed in the prepress and press area. Competency-based instructional objectives were developed for new and revised courses. Competencies were assigned to existing courses and to new or revised courses. Procedures and criteria for evaluating students' attainment of competencies were written. Training was provided to enable faculty to use the new laser color separation scanner. Syllabi were developed for the new and revised courses. Project outcomes included: (1) revising the Graphic Arts program; (2) providing advanced placement for articulating audiovisual technical services; (3) increasing flexibility for students' electives; and (4) increasing articulation for degree students in other degree fields. (A proposed graphic communication curriculum and DACUM profiles for the core competencies associate degrees of applied arts and science, press operator, and prepress technician are included.) (NLA)

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GRAPHIC ARTS: PROGRAM/CURRICULUM REVISION
85-8009

Timothy L. Martin
Graphic Arts Curriculum Developer

THE WILLIAMSPORT AREA COMMUNITY COLLEGE

WILLIAMSPORT, PENNSYLVANIA 17701

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Preface

In the years since the College's Graphic Arts Program was last revised a decade ago the graphic arts industry has changed immensely, both through an influx of new technologies and by shifts in the degree to which existing technologies are utilized. The program must be revised to reflect those changes in order to provide graduates with the skills required by the industry.

GRAPHIC ARTS PROGRAM

Abstract

Agency: The Williamsport Area Community College
1005 West Third Street
Williamsport, PA 17701

Project Title: Graphic Arts Program

Contract No.: 85-8009: To revise the Graphic Arts program and curriculum

Funding period: 7/1/87 to 6/30/88

Approved funds: $38,761

Statement of Purpose: The purpose of this project was to revise and update the graphic arts program and curriculum.

Objectives

1. Identify competencies needed by the graphic arts industries for knowledge and skills required for entry-level positions.
2. Write competency-based instructional objectives.
3. Develop strategies for delivering competency-based instruction.
4. Develop faculty familiarity with and skills in using techniques, materials, and equipment that utilize new technology.
5. Develop course materials.

Outcomes

1. DACUM (Develop a Curriculum) workshops were conducted to develop to determine competencies needed in the prepress and press area.
2. Competency-based instructional objectives were developed for new and revised courses.
3. Competencies were assigned to existing courses and to new or revised courses. Procedures and criteria for evaluating students' attainment of competencies were written. Course syllabi were written or revised to reflect the competency base of the courses.

4. Training will be provided for faculty to use the new laser color separation scanner.

5. Syllabi were developed for the new and revised courses.

Audience

The resulting reports, DACUM and curriculum materials are useful to the Bureau of Vocational Education, vocational educators, curriculum developers and the printing industry.

Published Materials

* Final Report
* Copies of Proposed Curricular Areas
* Task Analysis charts for pre-press and press areas
* DACUM task analysis - Prepress Technician and Pressman

Financial Summary

Category	Approved	Expended
Curriculum Developer	16,771.00	16,771.02
Part-time faculty overload	6,400.00	6,390.00
Consultant Honoraria	2,100.00	1,050.00
Instructional Materials	230.00	.00
Reference/Books on Graphic Arts	7,567.00	7,469.17
Subscription or Graphic Arts Magazines	782.00	531.00
Travel	2,040.00	1,706.78
Indirect Costs	2,871.00	1,255.35

Project Approach/Methodology

Background

The graphic arts and printing industry is rapidly changing due in large part to an influx of new technology, especially computer technology. In order to keep abreast of these developments, the Graphic Arts and Printing Program must identify the competencies required in the workplace. The curriculum must be revised to provide students with these competencies.

Methods

The major approach and methodology to revising the curriculum was to use the DACUM task analysis process. Experts from the printing industry were used to form the DACUM pre-press and press panels. From these panels we were able to develop task analysis charts indicating what an expert worker needs to know on a daily basis.

A curriculum developer was hired to facilitate and coordinate the program revision. The Dean of Educational Research, Planning, and Evaluation, a Recorder and the Curriculum Developer were responsible for conducting the DACUM workshops. The press DACUM was held in Lancaster, PA, and the pre-press DACUM was held at The Williamsport Area Community College. Each workshop was held for two days with an average of ten panel members representing the major printing companies in the respective geographical area.

A follow-up DACUM was held at The Williamsport Area Community College which was used to derive new and revised courses from the previous two DACUM task analysis charts. The panel consisted of: Assistant Director of Integrated Studies, Graphic Arts Curriculum Developer, selected participants from the previous two DACUM panels, faculty representing core

courses, and a consultant from the Graphic Arts Technical Foundation in Pittsburgh, PA. The DACUM panel was again facilitated by the Dean of Educational Research, Planning, and Evaluation.

The graphic arts curriculum developer visited many of the printing companies that participated in the DACUM process. These visitations helped us gain an understanding of the operations of a modern printing plant and allowed us to compare how our present curriculum was meeting the needs of industry.

Our Advisory Committee also served as a guide in our research by bringing us both their immediate needs as well as their technical knowledge as to what they foresee as future problems and trends in the printing industry that will need addressed.

Conclusion

Positive outcomes from the grant consisted of: Revising the Graphic Arts program, including competency based instruction for all courses, improvement for advanced placement for articulating AVTS, increased emphasis on color, increased flexibility for students' electives in GCO and increased articulation for degree students in other degree fields.
Donation of a Hell 299 L Laser Color Scanner to the Graphic's department.
Ordered $ amount of books and reference material for library
Ordered $ amount of A.V. material for instructors use

Attachments/Appendices

1. Pre-press task analysis chart
2. Press task analysis chart
3. New program revision - courses list

GRAPHIC COMMUNICATION CURRICULUM

Proposed

Course Number	Course Title	Credits
FIRST SEMESTER		
GCO 111	Orientation to Graphic Communication	3
GCO 112	Design & Typography (Desktop Publishing)	3
GCO 115	Film Imaging I: Line	2
GCO 116	Film Imaging II: Contacting	2
GCO 117	Film Assembly I: Flat Sheet	2
ENL 111	English Composition I	3
SEC 509	Keyboarding	1
		16
SECOND SEMESTER		
GCO 121	Basic Composition	3
GCO 122	Mechanical Preparation	3
GCO 125	Film Imaging III: Halftone	2
CHM 109	Chemistry for Graphic Communication	2
MTH	Math - Elective	3
	Humanities, Social Science, - Elective	3
		16
THIRD SEMESTER		
GCO 211	Press Operations I	3
GCO 212	Paper and Ink	3
GCO 231	Color Reproduction	3
GCO 237	Film Assembly II: Signature	2
GCO 241	Printing Estimating Practices	3
CSC 104	Microcomputer Fundamentals	1
PED	Fitness and Lifetime Sports	1
		16
FOURTH SEMESTER		
GCO	Elective	3
GCO	Elective	3
ENL	Technical & Oral Communications	3
	Business - Elective	3
ENT 105	Microcomputer Maintenance	1
	Science - Elective	3
		16
GCO ELECTIVES		
GCO 241	Color Separation	3
GCO 243	Color Film Assembly	3
GCO 244	Advanced Mechanical Preparation	3
GCO 245	Advanced Composition	3
GCO 246	Press Operations II	3
GCO 247	Production Printing	3
		18

CM13/2535

DACUM PROFILE: CORE COMPETENCIES ASSOCIATE DEGREE OF APPLIED ARTS AND SCIENCE

PANEL MEMBERS

Candy Baran, **American Home Foods,** Milton
Diane Dorner, **Burger King,** Williamsport
Bruce Emig, **The Sun Spot,** Jersey Shore
Louise Greco, **AMP Products Corporation,** Devon
Greg Hatches, **Data Papers, Inc.,** Muncy
Valerie Petroski, **Ettinger's Landscaping,** Montoursville
Mike Rafferty, **The Sunday Grit,** Williamsport
Dwayne Rummings, **Techno-Craft, Inc.,** McElhatten
Mark Slonaker, **Sprout-Bauer,** Muncy
Leslie Smith, **Dr. Marvin Burger,** Selinsgrove

FACILITATOR

Dr. Jeannette L. Fraser — Dean of Educational Research, Planning, and Evaluation

RECORDER

Bernadette Eck

DATE

October 29-30, 1987

EDUCATIONAL RESEARCH, PLANNING, AND EVALUATION

THE WILLIAMSPORT AREA COMMUNITY COLLEGE
WILLIAMSPORT, PENNSYLVANIA

CORE COMPETENCIES: The graduate of The Williamsport Area Community College will be able to:

COMPETENCIES →

A	COMMUNICATE	Comprehend written material A-1	Listen actively A-2	Express concepts in writing A-3	Express concepts orally A-4
		Communicate in team atmosphere A-5	Communicate non-verbally A-6		
B	APPLY PROBLEM SOLVING SKILLS	Identify a problem B-1	Define alternative solutions B-2	Evaluate alternative solutions B-3	Apply scientific reasoning B-4
		Employ resource materials B-5	Support opinions with research B-6		
C	REASON QUANTITATIVELY	Apply basic arithmetic skills C-1	Apply basic algebra skills C-2		
D	REASON QUALITATIVELY	Define personal values D-1	Apply ethical choices D-2		
E	DEMONSTRATE CAREER MANAGEMENT SKILLS	Understand basic economic principles E-1	Understand basic business principles E-2	Function independently E-3	Demonstrate systematic planning skills E-4
		Apply time management skills E-5	Apply basic personal financial skills E-6	Prepare comprehensive resume E-7	Engage in interview process E-8
F	PERCEIVE THE GLOBAL ENVIRONMENT	Recognize the value of physical sciences F-1	Understand historical basis of current society F-2	Display an awareness of societal responsibility F-3	Recognize diversity of world cultures F-4
		Recognize the value of the arts F-5			
G	REALIZE IMPORTANCE OF HEALTH AND FITNESS	Understand lifelong value of physical fitness G-1	Practice physical fitness G-2	Apply stress management skills G-3	Understand nutrition G-4
H	DEMONSTRATE COMPUTER LITERACY	Adapt to computer applications H-1	Demonstrate keyboarding ability H-2		

QUALITIES TO BE DEVELOPED IN GRADUATES OF THE WILLIAMSPORT AREA COMMUNITY COLLEGE

Self-awareness
Ingenuity
Reliability
Responsibility
Community awareness
Self-motivation
Determination
Self-satisfaction
Self-confidence
Leadership

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INTERPRETATION OF CORE COMPETENCIES DACUM CHART

OVERVIEW

The DACUM panel devoted considerable discussion to each section of the chart during its development. Most of that discussion is not immediately clear to the casual reader of the DACUM chart. This addendum clarifies the meaning behind the competencies listed on the chart.

As you read the chart, please remember that the panel was not using educational jargon when they developed the chart. Therefore, interpreters of the chart should be careful not to apply strict educational definitions to the phrases used.

Panel Discussion: The panel composition and participation was excellent. Concerns that the panel would not be representative of the breadth of college programs did not materialize. Discussions did not follow any particular patterns by program area or division.

The panel was composed primarily of supervisors, many having hiring responsibility in the jobs that they currently hold. All were graduates of the College. There were, however, no panel members that worked for non-profit or government agencies. The panel understood their task and took the task very seriously.

Panel Discussion: The focus of the DACUM chart was the core competencies needed for the student enrolled in an Applied Arts or Applied Science degree program. The panel discussion focused primarily on preparing a student for the career world. While a number of personal enrichment competencies were identified as important, the primary focus of most of the discussion revolved around preparing the student for the world of work.

The panel stressed that these competencies were minimum competencies. Many programs need to require students to have competencies beyond those identified on the chart, particularly in the fields of math and science. In no way should this chart serve as a maximum listing of education needs. Program faculty must weigh carefully the need for additional courses to support technical areas.

Another concern was raised as part of the discussion. All curriculum need to address career awareness in their home program courses. Early in the program, practitioners need to be brought in to allow students to be oriented to their chosen profession. The panel was concerned that many students have no idea what the 'real world' is like in their chosen career area.

BAND BY BAND DISCUSSION OF THE CHART

COMMUNICATE: This band was identified as the most important band. In College, students are trained to work independently; however, the College also needs to stress the importance of working as a team. A successful worker will learn to share information and to seek out assistance from others, not work in a vacuum.

This band should be interpreted in its most global fashion. Communication as interpreted by the panel means to have strong interpersonal skills. The panel felt proper communication and effective communication meant that the development of effective interpersonal relationships would also be taught.

APPLY PROBLEM SOLVING SKILLS: This band is closely related to bands C & D (Reason Quantitatively and Reason Qualitatively). The bands, however, remained separate because the panel did not want the quantitative skills to get lost. The scientific method was highlighted as one technique of problem solving. B-5 referred not only to library resource materials but also to the use of knowledgeable persons and peers as resources.

REASON QUANTATIVELY: The panel was insistent that no student should leave the institution without sufficient math to be able to function reasonably in the world and not be math illiterate. In fact, one student was quite embarrassed that she has an associate degree and was a successful student but considers herself math illiterate. The panel was also quite certain that the level of math needed was not higher than algebra skills.

They expressed a concern that math be grounded in the technical area of study. Without that grounding, students do not understand why math is important; therefore, they do not fully appreciate or apply math theory until long after graduation.

They were concerned that students understand how to solve word problems. The panel recognized math as one source of problem solving skills.

REASON QUALITATIVELY: The panel had some difficulty with this band. They had problems with the definition of values and ethics. I believe that the panel would support a liberal interpretation of this band.

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DEMONSTRATE CAREER MANAGEMENT SKILLS:

The panel expressed considerable concern that graduates need to understand very basic principles of business so the worker can understand the position of management as well as the position of the worker. The panel stressed the word basic in these competencies (E-1 & E-2).

While the panel wants students to be able to work in groups (A-5), they also recognized the importance of the individual being able to function without direct supervision. Hence, E-3. The panel discussed the person's being able to function independently at work as well as in his/her personal life.

Planning skills were related to time management skills although the panel felt that these were separate competencies.

E-6, personal financial skills dealt with understanding stocks/bonds, insurance plans, retirement plans, as well as record keeping and taxes.

Every student, regardless of curriculum, should have a usable resume and should have practiced interview experience, prior to graduation.

PERCEIVE THE GLOBAL ENVIRONMENT:

F-1 refers to all of the natural sciences. The panel discussed two alternatives: either the development of a general science survey course or student selection of science courses that interest them the most. No real preference was identified by the panel. Physics, chemistry, biology, and environmental science were all mentioned. Biology was discussed in terms of its relationship to the health and well-being of the individual.

F-2, F-3, & F-4 were discussed as a group to refer to the social sciences. History was thought to be important in helping to understand the context of current events. World cultures were identified to allow the student to understand that cultures are the basis for differing values. Once again, this was identified to help students understand the reasons behind current events.

REALIZE IMPORTANCE OF HEALTH AND FITNESS:

The panel was very explicit and very certain about how they wished to see health and fitness competencies handled. Physical education courses should specifically address fitness, not recreation or leisure sports. Courses such as archery or bowling should not be offered. Courses should have an aerobic nature. Courses should fit the ability of students; exercise levels for older, out of shape students should be different from those for more fit students.

No one should be exempt from physical fitness courses. This includes parttime as well as fulltime students, handicapped as well as older students.

Stress management skills and nutrition also need to be taught. All of these components are important for a person to live a long and fruitful life as well as to be a productive worker. Health and physical fitness were not either/or competencies; both need to be addressed.

DEMONSTRATE COMPUTER LITERACY:

The panel believes that this band may be removed from our list of core competencies, although today it is still needed. Of particular concern is that students should not be afraid of computer applications and that they have the most basic skills to be able to use the computer. They did not believe that anything near the total range of applications can be taught, therefore, they wish only that students have sense of the uses of the computer; not be afraid that pushing the wrong button will blow it all up, and that keyboarding (not typing) be taught to all students.

The final list, titled QUALITIES TO BE DEVELOPED IN GRADUATES OF THE WILLIAMSPORT AREA COMMUNITY COLLEGE are placed at the bottom of the chart, but are no less important than any band on the chart. The panel believed that these qualities were so important that they should be addressed in every education course at the College. The panel does not preclude specific objectives in courses to develop these qualities. Home program courses as well as general education courses should address these qualities.

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DACUM PROFILE FOR PRESSMAN

PANEL MEMBERS
Dennis Bushong, **Intellgencier Printing Co.,** Lancaster
Edward L. Feeser, **Maple Press Co.,** York
Craig A. Keener, **Acorn Press, Inc.,** Lancaster
Richard D. Kurtz, **R. D. Donnelley & Sons,** Lancaster
Thomas Martin, **Science Press, Inc.,** Ephrata
Furman D. Parker, **Sowers Printing Co.,** Lebanon
Robert Slick, **R. D. Donnelley & Sons,** Lancaster
Clyde Tripple, **Veitch Printing Corp.,** Lancaster

FACILITATOR
Dr. Jeannette L. Fraser—Dean of Educational Research, Planning, and Evaluation

RECORDER
Bernadette Eck

COORDINATORS
Timothy Martin
Bernadette Eck

DATE
February 23 and 24, 1988

Educational Research, Planning, and Evaluation

THE WILLIAMSPORT AREA COMMUNITY COLLEGE
Williamsport, Pennsylvania

PRESSMAN: prepares, runs, and maintains a printing press to produce quality printing at maximum efficiency in a safe manner. The expert pressman will be able to:

Duties

A	Follow Safety Practices	Promote safety within crew A-1	Maintain press safety equipment A-2	Practice good housekeeping A-3	Maintain emergency equipment A
B	Troubleshoot Problems	Identify problems B-1	Identify pattern of problems B-2	Identify possible variables B-3	Prioritize problems B
C	Communicate with Others	Communicate with superiors C-1	Provide instructions to crew C-2	Supervise crew C-3	Establish rapport wit customer C
		Maintain communications with other departments C-11			
D	Perform Makeready Functions	Read job instruction materials D-1	Assemble materials D-2	Determine inking sequence D-3	Mount plates D
		Set pressure settings D-11	Set web tensions D-12	Check fountain solution D-13	Adjust spray powder D
E	Perform Running Functions	Obtain color okay E-1	Flag customer samples E-2	Maximize press speed E-3	Stay within allowabl tolerances
		Maintain ink, paper, and water levels E-11	Keep records E-12	Perform machinery sensory checks E-13	Preplan for maintenance E
F	Perform Cleanup Procedures	Clean and gum plates F-1	Wash blankets F-2	Clean ink fountains F-3	Wash rollers
G	Adjust Press Settings	Set timing G-1	Set grippers G-2	Check folder settings on web press G-3	Change rollers
H	Perform Scheduled Maintenance Procedures	Lubricate press H-1	Check automatic oilers H-2	Clean dampening system H-3	Clean spray powder unit
		Remove and clean fountain blades H-11			
I	Function in the Work Environment	Promote company policies and procedures I-1	Provide leadership in workplace I-2	Maintain company quality standards I-3	Adhere to producti schedules

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Tasks

Report safety hazards A-5	Follow hazardous materials handling procedures A-6	Utilize MSDS sheets A-7	Engage safe button when working on press A-8	Use right tool for right job A-9	Comply with dress code A-10
Evaluate solutions B-5	Eliminate variables B-6	Determine course of action B-7	Document and date press problems B-8		
Satisfy customer's needs C-5	Maintain press logs C-6	Maintain production data C-7	Document press performance C-8	Provide on-the-job training C-9	Document defective materials (include samples) C-10

Set ink fountains D-5	Setup sheeter on sheetfed press D-6	Setup feeder on sheetfed press D-7	Setup delivery on sheetfed press D-8	Setup reels on web press D-9	Setup web folder attachments D-10
Adjust drier equipment D-15	Set register D-16	Adjust color D-17	Proofread sheet to copy D-18	Rule-off sheet D-19	
Maintain/adjust color to match color standards E-5	Maintain ink and water balance E-6	Maintain/adjust register E-7	Maintain quality profile E-8	Check for paper defects E-9	Check for printing defects E-10
Preplan for next job E-15					
Clean cylinders F-5	Clean bearers F-6	Wipe down press frames F-7	Fill all solvent/ chemical containers F-8		
Set rollers G-5	Check printing pressures G-6	Set infeed nip roller on web press G-7	Tram idlers on web press G-8		
Clean press filters H-5	Clean grippers H-6	Clean electric eyes H-7	Check roller durometer H-8	Check for equipment wear H-9	Check systems for normal operation H-10

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SKILLS AND KNOWLEDGE

Read and comprehend
Nomenclature
Mechanics of the press
Color theory
Ink
Ink mixing to match PMS book
Ink, paper, and fountain solutions
Paper making process
Knowledge of
  -cleaning solvents
  -pre-press
  -bindery
  -checking bearer pressure
Emergency equipment (fire, first aid, etc.)
Principles of
  -mechanics acids/ph
  -chemistry - conductivities
  -physics - gears
Math - conversion to metric
  - fraction
  - decimals
  - basic arithmetic
  - basic mechanical math
Computer - use a user friendly program
Read micrometer

WORKERS' TRAITS AND ATTITUDES

Common sense
Quality conscious
Be responsible
Mechanical ability
Positive attitude
Logical thinking
Neatness
Strong leadership
Accept responsibility
Safety conscious
Cooperative
Flexibility
Accept change
Stand all day
Cannot be color blind
Cannot have lifting restrictions

TOOLS AND EQUIPMENT

Durometer gauge
Packing gauge
Micrometer
Densitometer
Printers glass
5000K light viewing booth for color
Rule
PMS book
Conductivity meter
Mechanics tools for press
Torque wrench
Wedges
Precision level
Dial indicator
Printers dictionary - Pocket Pal

DACUM PROFILE FOR PREPRESS TECHNICIAN

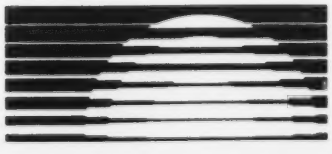
PANEL MEMBERS
Jim Croyle, **Jostens Printing and Publishing,** State College
Douglas Eaton, **Bucknell University,** Lewisburg
Gregory A. Hatches, **Data Papers, Inc.,** Muncy
Doug Hookway, **Veitch Printing Corporation,** Lancaster
Richard Kashner, **Press-Enterprise, Inc.,** Bloomsburg
Ron Paulhamus, **Paulhamus Litho Inc.,** Montoursville
Len Prosseda, **Phase One,** Sunbury
Richard Shaffer, **Grit,** Williamsport
Ron Shamma, **Grit,** Williamsport

FACILITATOR
Dr. Jeannette L. Fraser—Dean of Educational Research, Planning, and Evaluation

RECORDER
Bernadette Eck

COORDINATORS
Timothy Martin
Bernadette Eck

DATE
March 22 and 23, 1988



Educational Research, Planning, and Evaluation

THE WILLIAMSPORT AREA COMMUNITY COLLEGE
Williamsport, Pennsylvania

PREPRESS TECHNICIAN: prepares quality film, proofs, and plates from original copy and customer specifications for use in the printing industry. The expert prepress technician will be able to:

Duties

A	Communicate	Communicate with coworkers A-1	Communicate with other departments A-2	Communicate with management A-3	Communicate with customer A-4
B	Function in the Workplace	Comply with company policies B-1	Maintain company quality standards B-2	Participate in team atmosphere B-3	Follow safety procedures B-4
C	Typeset Copy	Analyze copy C-1	Select typeface C-2	Calculate copyfitting C-3	Keystroke copy C-4
D	Prepare Mechanical	Prepare artboard D-1	Design layout D-2	Scale and crop photos and art D-3	Paste-up copy and artwork D-4
E	Convert Copy to Film on Camera	Evaluate copy E-1	Clean copyboard glass E-2	Setup camera E-3	Shoot line copy E-4
		Evalute negatives E-11			
F	Convert Copy to Film on Scanner	Evaluate copy F-1	Comply to customer specifications F-2	Size original color copy F-3	Mount copy on scanning drum F-4
G	Prepare Separations for Film Assembly	Evaluate proofs/ reproofs G-1	Cut silhouette mask G-2	Clean film G-3	Perform dry dot etching G-4
H	Contact Photographic Material	Clean contact frame glass H-1	Select exposure H-2	Duplicate film H-3	Contact prints H-4
I	Assemble Film	Select stripping base I-1	Pin register I-2	Plan layout I-3	Draw master flat I-4
		Position halftones/ register process I-11	Position spreads, chokes, and knockouts I-12	Angle screen tints I-13	Cover flats I-14
J	Make Proofs and Plates	Clean contact frame glass J-1	Read job instruction materials J-2	Pin register J-3	Clean flats/film J-4
K	Maintain Equipment	Maintain chemistry level K-1	Perform scheduled maintenance procedures K-2	Identify problem K-3	Determine solution K-4

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Tasks →

Communicate with repair technicians A-5	Maintain timesheet A-6	Maintain records and logs A-7			
Practice good housekeeping B-5	Keep pace with new technology B-6	Provide on-the-job training B-7	Apply problem solving skills B-8		
Correct grammar C-5	Correct punctuation C-6	Output copy C-7	Process copy C-8	Proofread output C-9	Make proofreaders corrections C-10
Rule keylines D-5	Cut amber overlays D-6	Position copy overlays D-7	Prepare instruction tissue D-8	Prepare proof for customer D-9	Make customer's corrections D-10
Shoot diffusion transfer prints E-5	Shoot halftones E-6	Shoot duotones E-7	Shoot specialty screens E-8	Shoot conversion transparencies E-9	Process film E-10

Setup scanner F-5	Output film F-6	Process film F-7	Make proof F-8	Evaluate proof F-9	Perform corrections F-10
Duplicate separations G-5	Interpret customer corrections G-6	Perform customer modifications G-7	Evaluate modifications for possible rescan G-8		
Contact spreads, chokes, and knockouts H-5	Composite film H-6	Process film H-7	Evaluate film H-8	Opaque film H-9	
Prepare marks flat and color bar flat I-5	Analyze mechanicals I-6	Opaque film I-7	Position line film I-8	Cut windows I-9	Position overlay negatives I-10
Label flats I-15	Double check flats I-16				
Select exposure J-5	Expose proof/plate J-6	Follow development/ assembly procedures J-7	Inspect proof/plate J-8	Prepare proof for internal/customer evaluation J-9	Label plates J-10
Maintain log K-5	Maintain cleanliness of equipment K-6				

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SKILLS AND KNOWLEDGE

Skills:
- Chemistry of lithography
- Entire printing process
- Math
  - geometry
  - fractions - speed "in the head"
  - decimals - speed "in the head"
  - logarithms
- Use a ruler
- Use picas
- Computer applications
  - recordkeeping
  - prepress functions

Knowledge of:
- Color theory
- Print medium
- Keystroking
- Type styles
- Photosensitive system
- Proofreaders marks
- Layout and design
- Determine exposures
- Densitometry
- Reproduction process
- Nomenclature

WORKERS' TRAITS AND ATTITUDES

Adaptable
Flexible
Mechanically inclined
Organized
Logical
Creative
Positive attitude
Accept criticism
Active listener

TOOLS AND EQUIPMENT

Micromodifier
Mask/CAD system
Flat bed scanner
Step and repeat